First three problems: A survey by an electric company contains questions on the following: Age of household head (in years), Sex of household head, and Use of electric heating (yes or no).

1. What type of variable is "Age of household head"?
   (a) qualitative (b) quantitative

2. What type of variable is "Sex of household head "?
   (a) qualitative (b) quantitative

3. What type of variable is "Use electric heating (yes or no)"
   (a) qualitative (b) quantitative

Next three problems: The following data are annualized returns on a group of 14 stocks.
-1.2 3.9 8.2 9.0 10.0 11.0 12.5 13.0 14.8 15.5 16.2 16.7 18.0

4. The median is
   (a) 11.0 (b) 11.5 (c) 12.0 (d) 12.5 (e) none of these

5. The first quartile is
   (a) 3.9 (b) 6.4 (c) 9.5 (d) 8.8 (e) none of these

6. The 80th percentile is
   (a) 15.5 (b) 15.85 (c) 16.2 (d) 16.45 (e) none of these

7. What is the 90th percentile of the standard normal distribution?
   (a) 1.282 (b) 1.645 (c) 1.960 (d) 2.326 (e) 2.761

8. Find the 90th percentile of the normal distribution that has mean 50 and standard deviation 10.
   (a) 62.8 (b) 69.6 (c) 57.8 (d) 74.3 (e) 56.4

Next two problems: Consider the sample 3, 4, 6, 7.

9. The sample mean is
   (a) 3.0 (b) 3.5 (c) 4.0 (d) 4.5 (e) 5.0

10. The sample standard deviation is
    (a) 2.61 (b) 1.83 (c) 0.96 (d) 3.34 (e) none of these

Next three problems: The following stem and leaf plot gives weights (in kg) for a sample of twenty-two guinea pigs. The stems represent 0.9, 1.0, 1.0, 1.1, 1.1, 1.2 respectively.

9 | 5 5 7 8 8 9
10 | 0 0 1 2 3 3 3 4 4
10 | 6 8
11 | 1 4
11 | 8
12 | 1 4
11. The distribution of sample weights is best described as
   (a) symmetric about its mean (b) skewed to the right (c) skewed to the left

12. The sample median weight is
   (a) 1.03 kg (b) 1.02 kg (c) 1.025 kg (d) 1.04 kg (e) 1.06 kg

13. For this sample, the percentage of guinea pigs with weights greater than the median weight is (a) 42.1% (b) 47.4% (c) 50.0% (d) 36.4% (e) 52.6%

**Next two problems:** Suppose that the distribution of serum levels $X$ of cholesterol for a sample of adult males is normally distributed with mean 200 and standard deviation 15.

14. Approximately what percentage of sample males have $x$-values above 215?
   (a) 50% (b) 37.5% (c) 81.5% (d) 16% (e) 2.5%

15. Approximately what percentage of sample males have $x$-values between 170 and 230?
   (a) 50% (b) 37.5% (c) 68% (d) 99.9% (e) 95%

**Next four problems:** Below is a boxplot of the seal strengths of $n = 100$ sample potato chip bags.

16. Approximately, what percentage of bags had seal strengths above 15?
   (a) 50% (b) 40% (c) 75% (d) 25% (e) 5%

17. The median seal strength is about
   (a) 6 (b) 10 (c) 3 (d) 30 (e) 20

18. The distribution of scores is
   (a) symmetric about its mean (b) skewed to the right (c) skewed to the left

19. Approximately, what percentage of bags had seal strengths between 3 and 15?
   (a) 50% (b) 75% (c) 10% (d) 25% (e) 95%

**Answers:** 1b 2a 3a 4c 5d 6c 7a 8a 9e 10b 11b 12a 13d 14d 15e 16d 17a 18b 19a